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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO.  |
|---|-------------|----------------------|----------------------|-------------------|
| 10/625,576  | 07/23/2003  | Erland R. Sandstrom  | 2160-1B (FJ-99-361B) | 7749              |
| 40256   | 7590        | 11/02/2005           | EXAMINER             |                   |
| FERRELLS, PLLC<br>P. O. BOX 312<br>CLIFTON, VA 20124-1706 |             |                      |                      | PATTERSON, MARC A |
|   |             | ART UNIT             |                      | PAPER NUMBER      |
|   |             | 1772                 |                      |                   |

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/625,576             | SANDSTROM ET AL.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Marc A. Patterson      | 1772                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 11 August 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 41-50 and 57-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 41-50 and 57-69 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

**NEW REJECTIONS**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 41 – 50, 57 – 65 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxfield et al (WO 93/04118) in view of Willbrandt (U.S. Patent No. 5,769,266) and Aoki (U.S. Patent No. 4,101,618).

With regard Claim 41, Maxfield et al disclose a molded (page 37, lines 31 – 37) container (page 38, line 3), formed from a nanocomposite comprising a matrix polymer and a nanoparticle filler (platelets comprising a nanoscale filler; page 33, lines 1 – 26). Maxfield et al fails to disclose a container comprising a tumbler comprising a base forming the bottom of the tumbler defining an outer edge, a sidewall integrally formed with the base extending upwardly from the outer edge defining about its upper extremity a rim having a thickness greater than the adjacent portion of the sidewall, therefore fortified, and a container that is blow molded.

Willbrandt teaches a container comprising a tumbler (cup; column 3, lines 10 – 12) comprising a base forming the bottom of the tumbler (lower body portion; column 3, lines 25 – 28; Figure 1), therefore defining an outer edge, a sidewall integrally formed with the base extending upwardly from the outer edge (upper body portion; column 3, lines 43 – 45; Figure 1) defining about its upper extremity a rim (column 4, lines 44 – 47) having a thickness of 0.3 inch

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(column 4, lines 66 – 67), which is greater than the adjacent portion of the sidewall thickness of 0.04 inch (column 4, lines 17 – 19), which is molded (column 5, lines 11 – 15) for the purpose of obtaining a container that is capable of holding large quantities of beverage (column 1, lines 16 – 19). One of ordinary skill in the art would therefore have recognized the advantage of providing for the tumbler of Willbrandt in Maxfield et al, which is a molded container, depending on the desired beverage – holding capacity of the end product.

Aoki teaches that it is well known to make a container by injection blow molding (column 1, lines 21 – 23) for the purpose of obtaining a container having a cup shape (column 1, lines 23 – 27). One of ordinary skill in the art would therefore have recognized the advantage of providing for the injection blow molding of Aoki et al in Maxfield et al, which is a molded container, depending on the desired cup – like shape of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a tumbler comprising a base forming the bottom of the tumbler defining an outer edge, a sidewall integrally formed with the base extending upwardly from the outer edge defining about its upper extremity a fortified rim having a thickness greater than the adjacent portion of the sidewall in Maxfield et al in order to obtain a container that is capable of holding large quantities of beverage as taught Willbrandt and to have provided for injection blow molding, therefore blow molding, in Maxfield et al in order to obtain a container having a cup shape as taught Aoki. With regard to the claimed aspects of the the claimed aspects of the tumbler being prepared from an injection molded parison and the volume of the container being 1.5 – 4 times the volume of the parison, the claimed aspects are directed to process limitations, and are therefore given little patentable weight

With regard to Claim 42, the matrix resin disclosed by Maxfield et al is polypropylene (page 25, line 4).

With regard to Claims 43 and 46 – 48, the nanocomposite disclosed by Maxfield et al comprises from 0.05 to 20 percent by weight nanoparticles (page 22, lines 12 – 16).

With regard to Claims 44 and 49, the nanoparticles disclosed by Maxfield et al have an average size of less than 2 microns (50 Angstroms; page 2, lines 3 – 10).

With regard to Claims 45 and 50, the nanoparticles disclosed by Maxfield et al are clay particles (page 21, lines 3 – 7).

With regard to Claims 57 – 58, the matrix polymer disclosed by Maxfield et al is polycarbonate (page 22, lines 24 – 28) that is hydrolysis – stabilized (including as little water as possible to avoid hydrolytic cleavage; page 7, lines 8 – 11), and is therefore substantially hydrolytically stable over 10 wash cycles in alkaline environments. However, the claimed aspect of the polymer being substantially hydrolytically stable over 10 wash cycles in alkaline environments is directed to an intended use of the polymer, rather than a structural limitation, and is therefore given little patentable weight.

With regard to Claims 59 and 62, the matrix resin disclosed by Maxfield et al is a polyester (polyethylene terephthalate, therefore polyethylene terephthalate resin; page 24, lines 21 – 22).

With regard to Claim 60, the matrix resin disclosed by Maxfield et al is a polyolefin resin (page 25, lines 3 – 4).

With regard to Claim 61, the matrix resin disclosed by Maxfield et al is a polystyrene resin (page 25, line 6).

With regard to Claim 63, the matrix resin disclosed by Maxfield et al is a mixture (blend; page 25, lines 23 – 24) of polycarbonate resins (page 24, line 3) and acrylonitrile – butadiene resins (butadiene / acrylonitrile elastomers; page 25, line 30) and polystyrene resin; as stated above; Maxfield et al therefore disclose mixtures of polycarbonate resins and acrylonitrile – butadiene – styrene resins.

With regard to Claim 64, the matrix resin disclosed by Maxfield et al comprises an acrylic resin (polyacrylics; page 24, line 30).

With regard to Claim 65, the matrix resin disclosed by Maxfield et al comprises a polyvinyl chloride resin (page 24, line 28).

With regard to Claim 69, the nanoparticles disclosed by Maxfield et al comprise montmorillonite (page 21, lines 3 – 6).

3. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maxfield et al (WO 93/04118) in view of Willbrandt (U.S. Patent No. 5,769,266) and Aoki (U.S. Patent No. 4,101,618) and further in view of Hopperdietzel (U.S. Patent No. 5,114,779).

Maxfield et al, Willbrandt and Aoki disclose a polyolefin article comprising a nanoparticle filler as discussed above, which comprises additional fillers (page 30, line 35). Maxfield et al, Willbrandt and Aoki fail to disclose fillers which are nanoparticles comprising plastic particles.

Hopperdietzel teaches the use of plastic particles (particles of a plastic material; column 2, lines 23 – 26) as a filler (column 2, lines 21 – 24) comprising nanoparticles (particle size of 0.002 mm; column 3, lines 1 – 3) in an article (shaped thermoplastic material; column 2, lines 21

– 24) comprising a polyolefin (polypropylene; column 2, lines 32 – 34) for the purpose of using a filler which has inherent flexibility (column 3, lines 12 – 14). One of ordinary skill in the art would therefore have recognized the advantage of providing for the nanoparticles of Hopperdietzel in Maxfield et al, Willbrandt and Aoki, which comprises a polyolefin article, depending on the desired flexibility of the filler of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for fillers which are nanoparticles comprising plastic particles in Maxfield et al, Willbrandt and Aoki in order to obtain a filler which has inherent flexibility as taught by Hopperdietzel.

4. Claim 67 – 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxfield et al (WO 93/04118) in view of Willbrandt (U.S. Patent No. 5,769,266) and Aoki (U.S. Patent No. 4,101,618) and further in view of Sakurai et al (U.S. Patent No. 4,219,453).

Maxfield et al, Willbrandt and Aoki disclose a polyolefin article comprising a nanoparticle filler as discussed above, which comprises additional fillers (page 30, line 35). With regard to Claims 67 – 68, Maxfield et al, Willbrandt and Aoki fail to disclose fillers which are nanoparticles comprising zinc or titanium oxide.

Sakurai et al teach the use of particles comprising zinc or titanium oxide (column 2, line 62) as a filler (column 2, line 59) comprising nanoparticles (particle size of 0.01 microns; column 2, lines 60 – 61) in an article comprising a polyolefin (ethylene polymer; column 1, line 1) for the purpose of obtaining an article having improved toughness (column 1, line 9). One of ordinary skill in the art would therefore have recognized the advantage of providing for the

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nanoparticles of Sakurai et al in Maxfield et al, Willbrandt and Aoki, which comprises a polyolefin article, depending on the desired toughness of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for fillers which are nanoparticles comprising zinc or titanium oxide in Maxfield et al, Willbrandt and Aoki in order to obtain an article having improved toughness as taught by Sakurai et al.

#### ANSWERS TO APPLICANT'S ARGUMENTS

5. Applicant's arguments regarding the 35 U.S.C. 103(a) rejection of Claims 41 – 50 and 57 – 58 as being unpatentable over Maxfield et al (WO 93/04118) in view of Willbrandt (U.S. Patent No. 5,769,266) and Aoki (U.S. Patent No. 4,101,618), of record in the previous Action, have been carefully considered but have not been found to be persuasive for the reasons set forth below.

Applicant argues, on page 6 of the remarks dated August 11, 2005, that the claimed invention is patentable for reasons stated in the parent application.

However, it is unclear to which arguments Applicant is referring.

Applicant argues, on page 5 of the remarks dated August 11, 2005, that unexpected, superior results are achieved in the claimed invention because polymer materials made with nano – clay fillers exhibit increased melt strength, and therefore exhibit an unexpected superior result in terms of processability of filled polymer for injection blow molding; the prior art, Applicant argues, contains no suggestion that nanocomposites are especially suitable for blow molding tumblers.

However, as stated on pages 2 – 3 of the previous Action, it would have been obvious for one of ordinary skill in the art to have provided for injection blow molding, therefore blow molding, in Maxfield et al in order to obtain a container having a cup shape as taught Aoki. Therefore, the unexpected properties which are stated by Applicant are already possessed by Maxfield et al modified by Aoki.

Applicant argues, on page 7, that Maxfield et al does not suggest or teach injection blow molding of tumblers, and that it is unexpected and surprising that nanocomposites are readily formed into tumblers by blow molding.

However, as stated above, injection blow molding is taught by Aoki, and the making of tumbler by molding is taught by Willbrandt.

Applicant also argues, on page 8, that although Maxfield et al disclose the manufacture of containers, Maxfield et al do not disclose cups formed by expanding a parison; the examples of Maxfield et al are directed to films, Applicant argues, thus in the examples Maxfield et al do not disclose that nanocomposite materials can be successfully blow molded into tumblers.

However, as stated above, injection blow molding is taught by Aoki, and the making of tumbler by molding is taught by Willbrandt.

Applicant also argues on page 8 that Willbrandt relates primarily to injection molded cups, as opposed to injection blow molded tumblers, and that injection molded cups are structurally different from injection blow molded cups.

However, Willbrandt is not limited to any specific molding technique; furthermore, as stated above, injection blow molding is taught by Aoki.

Applicant also argues, on page 9, that Aoki clearly indicates applicability only to hollow articles having openings at both ends.

However, it is unclear where Aoki indicates applicability only to hollow articles having openings at both ends, because Aoki teaches that it is well – known to use injection blow molding in the making of cups (the prior art of blow molding has been suitable for the manufacture of cups; column 1, lines 24 – 28). Furthermore, as stated above, it would have been obvious for one of ordinary skill in the art to have provided for injection blow molding, therefore blow molding, in Maxfield et al in order to obtain a container having a cup shape as taught Aoki.

6. The declaration under 37 C.F.R. 1.132 filed August 11, 2005 is insufficient to overcome the rejection of 35 U.S.C. 103(a) rejection of Claims 41 – 50 and 57 – 58 as being unpatentable over Maxfield et al (WO 93/04118) in view of Willbrandt (U.S. Patent No. 5,769,266) and Aoki (U.S. Patent No. 4,101,618) because the results which are declared to be unexpected appear to be taught by the prior art of record.

The declaration contains a statement by Applicant that suitable polymer material made with nanoclay fillers such as montmorillonite exhibit increased melt strength compared to like unfilled polymers; the result is an unexpected, superior result Applicant argues, for injection blow molding because the nanocomposites have superior melt strength.

However, as stated above, it would have been obvious for one of ordinary skill in the art to have provided for injection blow molding, therefore blow molding, in Maxfield et al in order to obtain a container having a cup shape as taught Aoki. Therefore, the unexpected properties which are stated by Applicant are already possessed by Maxfield et al modified by Aoki.

Furthermore, the nanoparticle filler of the claimed invention is not limited only to fillers which are nanoclay fillers such as montmorillonite.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A Patterson whose telephone number is 571-272-1497. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Marc Patterson 10/31/05*

Marc A. Patterson, PhD.  
Examiner  
Art Unit 1772